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**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

| Office Action Summary | Application No. 08/935,844 | Applicant(s) Wilson et al. |
|---|---|---|
| | Examiner Kimberly McLean | Group Art Unit 2751 |

☒ Responsive to communication(s) filed on *Jan 27, 2000*.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) *1-61* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-61* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

*--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---*

## DETAILED ACTION

1. The enclosed detailed action is in response to the After Final submitted on January 27, 2000 and the prior Amendment submitted on September 3, 1999.

### *Response to Amendment*

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Claim Rejections - 35 U.S.C. § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 59-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 59 recites the limitation "the group consisting" in Line 8. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 U.S.C. § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

7. Claims 1-2, 5, 10-12, 19, 39-40, 46-48, 51-52 and 61 is rejected under 35 U.S.C. 102(e) as being anticipated by Zarrow (USPN: 5,991,813).

Regarding claims 1, 10-12, 39, 46-47, 51-52 and 61, Zarrow discloses a computer system comprising a CPU (inherent to a computer; Figure 1, Reference 10); a first storage system that is coupled to the CPU to store information written from the CPU (Figure 1, Reference 16); a second storage system (Figure 1, Reference 18); at least one communication link coupling the second storage system to the CPU, the at least one communication link including a network cloud (WAN) that is shared with at least one other resource so that no portion of the network cloud is dedicated exclusively to transferring information between the CPU and the second storage system (Figure 1, Reference 14; C 2, L 1-3); and a mirror controller responsive to the information being written from the CPU to the first storage system to mirror at least some of the information written from the CPU to the first storage system in the second storage system by transferring the at least some of the information through the network cloud (C 4, L 41-67; C 5, L 1-35).

Regarding claims 2, 19, 40 and 48, Zarrow teaches a WAN (Internet) (C 2, L 1-3).

Regarding claim 5, Zarrow teaches data mirroring over a WAN. It is inherent to a WAN to comprise many resources. The protocol implemented in such a network allows for communication between any of the resources.

### *Claim Rejections - 35 U.S.C. § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 3, 18, 41 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813).

Zarrow teaches the concept of data mirroring over a network as cited in claims 1, 39 and 47 above. Zarrow does not explicitly teach an Intranet network. However, mirroring is well known in the art for increased reliability which is a desirable feature in a network. Therefore, it would have been obvious to one of ordinary skill in the art to use Zarrow's teachings in an Intranet network for the desirable purpose of reliability.

10. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Black (Computer Networks: Protocols, Standards and Interfaces, 2nd Edition, 1993).

Zarrow teaches the concept of data mirroring over a network as cited in claim 1 above. Zarrow does not explicitly teach a packet switched and cell network communication link. However, it is evident that issues such as applications, cost and other factors would dictate the use of one type of communication link versus another. It is really an issue of design choice. Black teaches in Computer Networks: Protocols, Standards and Interfaces, pages 159 -161, that organizations with low to medium traffic volumes could benefit from a packet switch network because most of the carriers charge on the volume of traffic. Thus it would have been obvious to one of ordinary skill in the art to use the teachings of Zarrow in a packet switch and cell network for a system with low to medium traffic volumes for the desirable purpose of efficiency and cost.

11. Claims 6-8, 15-16, 20-21, 42-44 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Staheli (USPN: 5,537,533).

Zarrow discloses the limitations cited above for claims 1 and 39. However, Zarrow does not explicitly disclose using a plurality of communication paths for parallel transfer of packets. Staheli discloses using a plurality of communication paths for parallel transfer of packets (C 10, L 52-62). It also known in the art to transfer data on parallel paths for increased throughput (such as Packet switch networks). Thus, it would have been obvious to one of ordinary skill in the art to add a

plurality of communication paths for parallel transferring of data packets to Zarrow's system for increased throughput and improved system performance.

12. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Sparks (USPN: 5,212,784)

Zarrow teaches the limitations cited above for claim 1, however, Zarrow does not explicitly teach a communication link including a wireless connection. Sparks does suggest using a wireless connection as a communication link in a backup/mirroring system (C 7, L 28-36). Sparks teaches that such a configuration would allow transmitting backup/mirroring data offsite immediately thus improving the reliability of the system. It is also well known that wireless connections such as satellites provide a large transmission capacity and improve reliability due to the lack of wires. Thus, it would have been obvious to one of ordinary skill in the art to use a wireless connection in Zarrow's system for increased reliability and increased throughput.

13. Claim 13 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Sparks (USPN: 5,212,784).

Zarrow teaches the limitations cited above, however, Zarrow does not explicitly teach a third storage system having a third communication link wherein information from the primary storage unit is mirrored thereto. However, Sparks suggest using a third storage system and a third communication link for coupling the storage device to the CPU as an additional backup systems,

wherein some of the information stored in the CPU would be mirrored/copied thereto (C 7, L 12-36). Sparks teaches that the additional backup system would provide simultaneous backup copies, thus increasing the reliability of the system (C 7, L 17-20). This concept is also known in RAID technology. Therefore, it would have been obvious to one of ordinary skill in the art to add a third storage device and a third communication link for storing mirrored information of the first storage device to Zarrow's system for increased reliability.

14. Claims 22-30 and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Sparks (USPN: 5,212,784).

Regarding claims 22, 24-26 and 53, Zarrow discloses a computer system comprising a CPU (inherent to a computer; Figure 1, Reference 10); a first storage system that is coupled to the CPU to store information written from the CPU (Figure 1, Reference 16); a second storage system (Figure 1, Reference 18); at least one communication link coupling the second storage system to the CPU (Figure 1, Reference 14; C 2, L 1-3); and a mirror controller responsive to the information being written from the CPU to the first storage system to mirror at least some of the information written from the CPU to the first storage system in the second storage system by transferring the at least some of the information over the at least one communication link (C 4, L 41-67; C 5, L 1-35). Zarrow does not explicitly disclose a the at least one communication link comprising at least one wireless connection. However, Sparks does suggest using a wireless connection as a communication link in a backup/mirroring system (C 7, L 28-36). Sparks teaches

that such a configuration would allow transmitting backup/mirroring data offsite immediately thus improving the reliability of the system. It is also well known that wireless connections such as satellites provide a large transmission capacity and improve reliability due to the lack of wires. Thus, it would have been obvious to one of ordinary skill in the art to use a wireless connection in Zarrow's system for increased reliability and increased throughput.

Claim 23 is rejected for the same rationale as applied to claim 3 above.

Regarding claims 27-30 and 54-55, it is well known to use satellites and microwave systems for a wireless communication link. It would have been obvious to use either for the desirable purpose of design choice.

15. Claims 31-33 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Sparks (USPN: 5,212,784).

Zarrow discloses a computer system comprising a CPU (inherent to a computer; Figure 1, Reference 10); a first communication link (Figure 1, Reference 32); a first storage system coupled to the CPU via the first communication link to store information written from the CPU (Figure 1, Reference 16); a second storage system (Figure 1, Reference 18); a second communication link coupling the second storage system to the CPU (Figure 1, Reference 14); and a mirror controller responsive to the information being written from the CPU to the first storage system to mirror at

least some of the information written from the CPU to the first storage system in the second storage system (C 4, L 41-67; C 5, L 1-35). Zarrow does not explicitly disclose a third storage system and a third communication link coupling the third storage system to the CPU. However, Sparks suggest using a third storage system and a third communication link for coupling the storage device to the CPU as an additional backup systems, wherein some of the information stored in the CPU would be mirrored/copied thereto (C 7, L 12-36). Sparks teaches that the additional backup system would provide simultaneous backup copies, thus increasing the reliability of the system (C 7, L 17-20). This concept is also known in RAID technology. Therefore, it would have been obvious to one of ordinary skill in the art to add a third storage device and a third communication link for storing mirrored information of the first storage device to Zarrow's system for increased reliability.

Regarding claims 35 and 38, multicasting is known in the art. It is an efficient way of transferring data to multiple devices. Thus it would have been obvious to one of ordinary skill in the art to use multicasting in the system taught by Zarrow and Sparks for the desirable purpose of efficiency.

16. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Sparks (USPN: 5,212,784 ) as applied to claim 31 above and further in view of Black (Computer Networks: Protocols, Standards and Interfaces, 2nd Edition, 1993).

Zarrow and Sparks teach the limitations cited above in claim 34, however, Zarrow and Sparks do not explicitly teach a packet switched and cell network communication link. However, it is evident that issues such as applications, cost and other factors would dictate the use of one type of communication link versus another. It is really an issue of design choice. Black teaches in Computer Networks: Protocols, Standards and Interfaces, pages 159 -161, that organizations with low to medium traffic volumes could benefit from a packet switch network because most of the carriers charge on the volume of traffic. Thus it would have been obvious to one of ordinary skill in the art to use the teachings of Zarrow in a packet switch and cell network for a system with low to medium traffic volumes for the desirable purpose of efficiency and cost.

17. Claims 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Staheli (USPN: 5,537,533).

Zarrow discloses a computer system comprising a CPU (inherent to a computer; Figure 1, Reference 10); a first storage system that is coupled to the CPU to store information written from the CPU (Figure 1, Reference 16); a second storage system (Figure 1, Reference 18); at least one communication link coupling the second storage system to the CPU (Figure 1, Reference 14; C 2, L 1-3); and a mirror controller responsive to the information being written from the CPU to the first storage system to mirror at least some of the information written from the CPU to the first storage system in the second storage system by transferring the at least some of the information

over the at least one communication link (C 4, L 41-67; C 5, L 1-35). Zarrow does not explicitly disclose the at least one communication link being selected from a group consisting of an Ethernet link, an asynchronous transfer mode (ATM) link, and FDDI link and a fibre channel link. Staheli does disclose at least one communication link coupling the second storage system to the CPU, where the at least one communication link is one of an Ethernet link, an asynchronous transfer mode (ATM) link, FDDI link or a fibre channel link (C 12, L 49-63). There are advantages and disadvantages to using the different communication links stated above and depending on a system's applications, users, cost and other factors one of ordinary skill in the art would have been motivated to use one of an Ethernet link, an asynchronous transfer mode (ATM) link, FDDI link or a fibre channel link for the desirable purpose of design choice.

18. Claim 59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarrow (USPN: 5,991,813) in view of Black (Computer Networks: Protocols, Standards and Interfaces, 2nd Edition, 1993).

Zarrow discloses a computer system comprising a CPU (inherent to a computer; Figure 1, Reference 10); a first storage system that is coupled to the CPU to store information written from the CPU (Figure 1, Reference 16); a second storage system (Figure 1, Reference 18); at least one communication link coupling the second storage system to the CPU (Figure 1, Reference 14; C 2, L 1-3); and a mirror controller responsive to the information being written from the CPU to the first storage system to mirror at least some of the information written from the CPU to the first

storage system in the second storage system by transferring the at least some of the information over the at least one communication link (C 4, L 41-67; C 5, L 1-35). Zarrow does not explicitly disclose the at least one communication link being one of a packet switched and cell switch network. However, it is evident that issues such as applications, cost and other factors would dictate the use of one type of communication link versus another. It is really an issue of design choice. Black teaches in Computer Networks: Protocols, Standards and Interfaces, pages 159 - 161, that organizations with low to medium traffic volumes could benefit from a packet switch network because most of the carriers charge on the volume of traffic. Thus it would have been obvious to one of ordinary skill in the art to use the teachings of Zarrow in a packet switch and cell network for a system with low to medium traffic volumes for the desirable purpose of efficiency and cost.

***Response to Arguments***

19. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Vishlitzky et al. (USPN: 5,960,216) - mirroring data over a public communication network.

Creemer (USPN: 5,951,644) - web site mirroring.

Kenner et al. (USPN: 6,003,030) - smart mirroring system.

Logue et al. (USPN: 5,935,207) - web site mirroring.

Kandasamy et al. (USPN: 5,513,314) - mirroring protocol for a NFS server.

Yu (USPN: 5,764,903) - network disk mirroring system.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly McLean whose telephone number is (703) 308-9592 (e-mail address: Kimberly.McLean2@uspto.gov). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan, can be reached on (703) 305-9712.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-9000.

Any formal response to this action intended for entry should be mailed to Commissioner of Patents and Trademarks, Washington, D.C. 20231 or faxed to (703) 305-9051 and labeled "FORMAL" or "OFFICIAL". Any informal or draft communication should be faxed to (703) 305-9731 and labeled "INFORMAL" or "UNOFFICIAL" or "DRAFT" or "PROPOSED" and followed by a phone call to the Examiner at the above number. Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

KNM

February 3, 2000

EDDIE P. CHAN
SUPERVISORY PATENT EXAMINER